



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

Address: COMMISSIONER FOR PATENTS

P.O. Box 1450

Alexandria, Virginia 22313-1450

www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/688,392	10/17/2003	Uri Elzur	14102US02	1304
23446 7590 05/05/2008 MCANDREWS HELD & MALLOY, LTD 500 WEST MADISON STREET SUITE 3400 CHICAGO, IL 60661				
EXAMINER				
BELL, LOUIS W				
ART UNIT		PAPER NUMBER		
2619				
MAIL DATE		DELIVERY MODE		
05/05/2008		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/688,392

Applicant(s)

ELZUR, URI

Examiner

LOUIS BELL

Art Unit

2619

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 March 2008.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-40 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-16 and 18-40 is/are rejected.
7) ☒ Claim(s) 17 and 18 is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 17 October 2007 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB-08)
Paper No(s)/Mail Date _____
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____

DETAILED ACTION

1. This is a Non-Final Office Action in response to the remarks filed on 3/28/2008 to a first non-final office action presented for this US Application. **Claims 1-40** are presented for examination. No Claims are withdrawn. No Claims are amended.

Claims Objection

2. **Claim 17, 18** objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. **Claims 1, 2, 6, 7 and 8** are rejected under 35 U.S.C. 102 (b) as being anticipated by Patent No.: US 5,958,017 to Scott et al., "Scott".

As to **Claim 1** Scott discloses communications system (*fig. 2 discloses a communication system and a node with 4 sets of input/output buffers, col.2 lines 45-55*), comprising: a first queue pair (QP) associated with a first connection, the first QP

comprising a first send queue (SQ) (*virtual channel 1 has an assigned dedicated send buffer 260.0 and 260.1, col. 8 lines 30-35, fig. 5a and virtual channel 1 has a received buffer 280.4-280.5, col. 9 lines 8-25, fig. 6A*); a second QP associated with a second connection, the second QP comprising a second SQ (*virtual channel 2 has a dedicated send buffer 260.2 through 260.6 col. 8 lines 30-35, fig. 5a and virtual channel 2 has a received buffer 280.4-280.5, col. 9 lines 8-25, fig. 6A*); and a general pool comprising a shared receive queue (SRQ), the SRQ being shared by the first QP and the second QP (*fig. 4 and fig. 6a disclose a large received buffer pool shared by virtual channel 1 and 2 and thus the queue pairs, col.7 lines 50-67 and col. 9, lines 8-25*).

As to **Claim 2** Scott discloses the communications system according to claim 1;

Scott further discloses the first QP and the second QP are part of a particular node (*fig. 4, fig 5.a and fig. 6a show the QP as part of the same node, col.7 lines 50-67, col. 8 lines 29-36 and col. 9 Lines 8-25*).

As to **Claim 6** Scott discloses the communications system according to claim 1; wherein the SRQ comprises a plurality of posted buffers (*the large receive buffer has a plurality of buffers 280.0-280.5 shared among the virtual channels and assigned to them, i.e. buffers 280.4 and 280.5 are assigned to virtual channels 1 and 2, fig. 6A col. 9 lines 8-25*).

As to **Claim 7** Scott discloses the communications system according to claim 1; wherein the first QP does not have its own dedicated received queue (RQ). (*Neither virtual channel 1 nor 2 have dedicated receive buffers, they share buffers 280.4 and 280.5 fig. 6A col. 9 lines 8-25*).

As to **claim 8** Scott disclose the communications system according to claim 1;

Scott further discloses the first QP conducts communications over the first connection as if the first QP has access to more resources of the SRQ than a statistical determination of resource requirements of the first connection (virtual channel 2 communicates using SQ 206.2-206.6, col. 8 lines 30-35, and uses and share receive queue 280.4-208.5 where the queue reservation protocol guarantee that all packets transmitted will eventually be accepted, col. 9 lines 8-25).

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. **Claims 25-28, 30, 33** are rejected under 35 U.S.C. 102(e) as being anticipated by Pub. No.: US 2004/0049774 A1 to Boyd et al. "Boyd".

As to **claim 25** Boyd discloses a communications system, comprising: a network interface card interface (NI) comprising a network interface card (NIC) and a NIC driver, the NIC being coupled to the NIC driver (*Fig 11 discloses a remote direct memory access NIC, RNIC, 1100, couple to RNIC driver, 1148*); and a consumer coupled to the

NI (*Fig. 11 shows the consumer, 1156, couple to the network interface*); the NIC comprises a first queue pair (QP), a second QP and a shared receive queue (SRQ), and wherein the first QP and the second QP share the SRQ (*Fig. 11 discloses QPs 1164 and 1172 that form a shared queue pair, pg 8 pgh 105*);

As to **claim 26** Boyd further discloses the consumer communicates with the NI via verbs (*Fig. 11 discloses consumer 1156 communicating with the NI via verbs, 1152*).

As to **claim 27** Boyd further disclose the consumer comprises a user space application (*pg. 7 pgh 95*).

As to **claim 28** Boyd further disclose the consumer comprises a kernel space application (*pg. 7 pgh 95*).

As to **claim 30** Boyd further discloses the NIC comprises a remote-direct-memory-access-enabled NIC (*Fig. 11, RNIC 1100*).

As to **claim 33** Boyd further discloses consumer comprises a verb consumer (*Fig. 11, verbs 1156*).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. **Claim 3 and 34** are rejected under 35 U.S.C. 103(a) as being unpatentable over “Scott” in view of Patent No.: US 5,889,956 to Hauser *et al.*, “Hauser”.

As to **claim 3** Scott does not expressly disclose the SRQ comprises an amount of resources that is statistically determined.

Hauser discloses provisioning network resources such as bandwidth and buffers based on statistically calculated demands (*col. 1 lines 1-25*).

Scott and Hauser are analogous art because they are from the same field of endeavor with respect to communication systems. At the time of the invention, it would have been obvious to a person of ordinary skilled in the art to combine the teachings of Scott and Hauser with motivations such as to allow resources to be used and assigned more effectively (*Hauser, col. 3 lines 5-8*).

As to **claim 34** Scott discloses a method for communicating, comprising: establishing a first connection associated with a first queue pair (QP); establishing a second connection associated with a second QP; concurrently sharing a single receive queue (RQ) between the first QP and the second QP (*virtual channel 1 is associated with send buffer 260.1 and virtual channel 2 is associated with send buffer 260.6, col. 8 lines 30-35, also virtual channel 1 and 2 are associated with receive buffer 280.4, col. 9 lines 8-25*).

Scott does not expressly disclose provisioning the single RQ using statistical information.

Hauser discloses provisioning network resources such as bandwidth and buffers based on statistically calculated demands (*col. 1 lines 1-25*).

Scott and Hauser are analogous art because they are from the same field of endeavor with respect to communication systems. At the time of the invention, it would have been obvious to a person of ordinary skilled in the art to combine the teachings of Scott and Hauser with motivations such as to allow resources to be used and assigned more effectively (*Hauser, col. 3 lines 5-8*).

9. **Claim 4-5, 35-37** are rejected under 35 U.S.C. 103(a) as being unpatentable over "Scott" in view of "*Hauser*" as applied to claim 3 above, and further in view of patent No.: US 5,999,518 to Nattkemper et al. "Nattkemper".

As to **claim 4** Scott and Hauser do not expressly disclose the amount of resources is statistically determined based upon empirical resource requirements of the first connection and the second connection.

Nattkemper discloses buffer being statically provisioned (*col. 22 lines 25-34*);

Scott, Hauser and Nattkemper are analogous art because they are from the same field of endeavor with respect to communication systems. At the time of the invention, it would have been obvious to a person of ordinary skilled in the art to combine the teachings of Scott, Hauser and Nattkemper with motivations such as to establishing and updating address information storage (*Nattkemper, col. 1 line 40-41*).

As to **claim 5** Scott and Hauser do not expressly disclose the amount of resources is statistically determined based upon dynamic statistics.

Nattkemper discloses buffer being dynamically provisioned (*col. 22 lines 25-34*).

Scott, Hauser and Nattkemper are analogous art because they are from the same field of endeavor with respect to communication systems. At the time of the invention, it would have been obvious to a person of ordinary skilled in the art to combine the teachings of Scott, Hauser and Nattkemper with motivations such as to establishing and updating address information storage (*Nattkemper*, col. 1 lines 40-41).

As to **claim 35** Scott and Hauser do not expressly disclose managing locally resources of the single RQ.

Nattkemper discloses a switching unit where the buffer management is done locally (col. 22 line 21-59).

Scott, Hauser and Nattkemper are analogous art because they are from the same field of endeavor with respect to communication systems. At the time of the invention, it would have been obvious to a person of ordinary skilled in the art to combine the teachings of Scott, Hauser and Nattkemper with motivations such as to establishing and updating address information storage (*Nattkemper*, col. 1 line 40-41).

As to **claim 36** Scott and Hauser do not expressly disclose managing dynamically resources of the single RQ.

Nattkemper discloses buffer being dynamically provisioned (col. 22 lines 25-34).

Scott, Hauser and Nattkemper are analogous art because they are from the same field of endeavor with respect to communication systems. At the time of the invention, it would have been obvious to a person of ordinary skilled in the art to combine the teachings of Scott, Hauser and Nattkemper with motivations such as to establishing and updating address information storage (*Nattkemper*, col. 1 lines 40-41).

As to **claim 37** Scott and Hauser do not expressly disclose managing locally RQ resources available to the first QP.

Nattkemper discloses a switching unit where the buffer management is done locally (*col. 22 line 21-59*).

Scott, Hauser and Nattkemper are analogous art because they are from the same field of endeavor with respect to communication systems. At the time of the invention, it would have been obvious to a person of ordinary skilled in the art to combine the teachings of Scott, Hauser and Nattkemper with motivations such as to establishing and updating address information storage (*Nattkemper, col. 1 lines 40-41*).

10. **Claim 9-14** are rejected under 35 U.S.C. 103(a) as being unpatentable over "Scott" in view of Patent No.: 5,867,663 to McClure et al., "McClure".

As to **claim 9** Scott does not expressly discloses the first QP comprises a first limit queue (LQ) that limits an amount of resources of the SRQ that the first QP can access, and wherein the second QP comprises a second limit queue (LQ) that limits an amount of resources of the SRQ that the second QP can access.

McClure discloses allocating buffer space to a queue where the buffer space is implemented by assigning a counter limit which represents the number of cell locations in a buffer pool that may be used by a particular queue at any one time during the connection (*col. 5 lines 28-46*).

Scott and McClure are analogous art because they are from the same field of endeavor with respect to communication systems. At the time of the invention, it would

have been obvious to a person of ordinary skilled in the art to combine the teachings of Scott and McClure with motivations such as to improve the system resources of a network (*McClure, col. 2 lines 5-8*).

As to **claim 10** Scott does not expressly disclose if the first QP exceeds a limit as set forth in the first LQ, then the first connection is dropped.

McClure disclose allocating network recourses and dedicating them to a virtual communication to guaranty a quality of service, it is obvious that is the queue capacity is exceeded the packets will be drop and this will case the quality of service to be degraded and thus lead to dropping the connection (*col.5 lines 30-50*).

Scott and McClure are analogous art because they are from the same field of endeavor with respect to communication systems. At the time of the invention, it would have been obvious to a person of ordinary skilled in the art to combine the teachings of Scott and McClure with motivations such as to improve the system resources of a network (*McClure, col. 2 lines 5-8*).

As to **claim 11** Scott does not expressly disclose the first LQ and the second LQ are managed locally.

McClure discloses that the counter limit to the queue is allocated by the communication device (*col. 5 lines 26-42*).

Scott and McClure are analogous art because they are from the same field of endeavor with respect to communication systems. At the time of the invention, it would have been obvious to a person of ordinary skilled in the art to combine the teachings of

Scott and McClure with motivations such as to improve the system resources of a network (*McClure, col. 2 lines 5-8*).

As to **claim 12** Scott does not expressly disclose the first LQ and the second LQ are managed locally without communications with other nodes.

McClure discloses that the counter limit to the queue is allocated by each communication device (*col. 5 lines 26-42*).

Scott and McClure are analogous art because they are from the same field of endeavor with respect to communication systems. At the time of the invention, it would have been obvious to a person of ordinary skilled in the art to combine the teachings of Scott and McClure with motivations such as to improve the system resources of a network (*McClure, col. 2 lines 5-8*).

As to **claim 13** Scott does not expressly disclose at least one of the first LQ and the second LQ is a soft limit.

McClure discloses that the size of a shared buffer can be adjusted dynamically (*col. 7 lines 17-24*);

Scott and McClure are analogous art because they are from the same field of endeavor with respect to communication systems. At the time of the invention, it would have been obvious to a person of ordinary skilled in the art to combine the teachings of Scott and McClure with motivations such as to improve the system resources of a network (*McClure, col. 2 lines 5-8*).

As to **claim 14** Scott does not expressly disclose if the soft limit is reached, then a connection behavior of the first connection or the second connection is analyzed

before a response is generated, and wherein the generated response is based on the analyzed connection behavior.

McClure discloses a buffer pool with one or more thresholds above which certain connections with a traffic type is denied (*col. 9 lines 35-41*);

Scott and McClure are analogous art because they are from the same field of endeavor with respect to communication systems. At the time of the invention, it would have been obvious to a person of ordinary skilled in the art to combine the teachings of Scott and McClure with motivations such as to improve the system resources of a network (*McClure, col. 2 lines 5-8*).

11. **Claim 15 and 16** are rejected under 35 U.S.C. 103(a) as being unpatentable over "Scott" in view of "McClure" as applied to claim 9 above and further in view of Pub. No.: US 2003/0115340 A1 to Sagula et al. "Sagula".

As to **claim 15** Scott and McClure do not expressly disclose the first LQ and the second LQ is a hard limit.

Sagula discloses setting up a hard limit in a communication system which is used to control successful connections (*pg. 4 paragraphs 44 and 45*).

Scott, McClure and Sagula are analogous art because they are from the same field of endeavor with respect to communication systems. At the time of the invention, it would have been obvious to a person of ordinary skilled in the art to combine the teachings of Scott, McClure and Sagula with motivations such as dynamically adjust a

data transmission system to maintain a high quality data transmission (Sagula, pg. 1 paragraph 10).

As to **claim 16** Scott and McClure do not expressly disclose if the hard limit is reached, then an automatic response is generated.

Sagula discloses that when the hard limit is exceeded then a process is terminated (*pg. 4 paragraphs 44-45*).

Scott, McClure and Sagula are analogous art because they are from the same field of endeavor with respect to communication systems.

At the time of the invention, it would have been obvious to a person of ordinary skilled in the art to combine the teachings of Scott, McClure and Sagula with motivations such as dynamically adjust a data transmission system to maintain a high quality data transmission (*Sagula, pg. 1 paragraph 10*).

12. **Claim 19** is rejected under 35 U.S.C. 103(a) as being unpatentable over "Scott" in view of patent No.: US 5,999,518 to Nattkemper et al. "Nattkemper".

As to **claim 19** Scott does not expressly disclose resource allocation for the SRQ is managed locally.

Nattkemper discloses a switching unit where the buffer management is done locally (*col. 22 line 21-59*).

Scott and Nattkemper are analogous art because they are from the same field of endeavor with respect to communication systems. At the time of the invention, it would have been obvious to a person of ordinary skilled in the art to combine the teachings of

Scott and Nattkemper with motivations such as to establishing and updating address information storage (*Nattkemper, col. 1 line 40-41*).

13. **Claim 20, 21 and 24** are rejected under 35 U.S.C. 103(a) as being unpatentable over Patent No.: US 5,958,017 to Scott et al., "Scott" in view of Pub. No.: US 2004/0049774 A1 to Boyd et al., "Boyd".

As to **claim 20** Scott does not expressly disclose the first QP is associated with a first completion queue (CQ), and wherein the second QP is associated with a second CQ.

Boyd discloses completion queues associated with queue pairs (*Fig. 11, pg. 8 paragraph 105*).

Scott and Boyd are analogous art because they are from the same field of endeavor with respect to communication systems. At the time of the invention, it would have been obvious to a person of ordinary skilled in the art to combine the teachings of Scott and Boyd with motivations such as to allow communications to continue as a result of a planned or unplanned RNIC outage (*Boyd, pg. 1 paragraph 10*).

As to **claim 21** Scott does not expressly disclose the general pool comprises a shared CQ (SCQ), the SCQ being associated with the first QP and the second QP.

Boyd discloses share completion queues associated with queue pairs (*Fig. 11*);

Scott and Boyd are analogous art because they are from the same field of endeavor with respect to communication systems. At the time of the invention, it would have been obvious to a person of ordinary skilled in the art to combine the teachings of

Scott and Boyd with motivations such as to allow communications to continue as a result of a planned or unplanned RNIC outage (Boyd, *pg. 1 paragraph 10*).

As to **claim 24** Scott disclose the communications system according to claim 1;

Scott does not expressly disclose the at least one of the first connection and the second connection is an Internet small computer system interface (iSCSI) over RDMA (iSER) connection;

Boyd discloses a remote interface controller NIC that can be used by iSCSI (*pg. 1 paragraph 7*);

Scott and Boyd are analogous art because they are from the same field of endeavor with respect to communication systems. At the time of the invention, it would have been obvious to a person of ordinary skilled in the art to combine the teachings of Scott and Boyd with motivations such as to allow communications to continue as a result of a planned or unplanned RNIC outage (Boyd, *pg. 1 paragraph 10*).

14. **Claim 22 and 23** are rejected under 35 U.S.C. 103(a) as being unpatentable over “Scott” in view of Patent No.: US 6,611,883 B1 to Avery *et al.*, “Avery”.

As to **claim 22** Scott does not expressly disclose the general pool comprises a memory translation and protection table (TPT) associated with resources of the general pool;

Avery discloses the uses of Queue Pairs and Translation and protection table TPT for an InfiniBand RDMA system (*col. 8 lines 55-64 and fig. 7*).

Scott and Avery are analogous art because they are from the same field of endeavor with respect to communication systems. At the time of the invention, it would have been obvious to a person of ordinary skilled in the art to combine the teachings of Scott and Avery with motivations such as to perform address mapping and translation conventionally perform by an I/O memory management unit (*Avery, col. 3 lines 13-15*)

As to **claim 23** Scott does not expressly disclose at least one of the first connection and the second connection is a remote direct memory access (RDMA) connection;

Avery discloses work queue pairs associated with RDMA processing (*col. 2 lines 40-56 and col. 10 lines 23-31*).

Scott and Avery are analogous art because they are from the same field of endeavor with respect to communication systems. At the time of the invention, it would have been obvious to a person of ordinary skilled in the art to combine the teachings of Scott and Avery with motivations such as to perform address mapping and translation conventionally perform by an I/O memory management unit (*Avery, col. 3 lines 13-15*)

15. **Claim 29** is rejected under 35 U.S.C. 103(a) as being unpatentable over "Boyd" in view of Patent No.: US 5,889,956 to Hauser *et al.*, "*Hauser*".

As to **claim 29** Boyd does not expressly disclose least one of the consumer and the NI comprises an SRQ manager that employs statistical provisioning in managing resources of the SRQ.

Hauser discloses provisioning network resources such as bandwidth and buffers based on statistically calculated demands (*col. 1 lines 1-25*).

Boyd and Hauser are analogous art because they are from the same field of endeavor with respect to communication systems. At the time of the invention, it would have been obvious to a person of ordinary skilled in the art to combine the teachings of Boyd and Hauser with motivations such as to allow resources to be used and assigned more effectively (*Hauser, col. 3 lines 5-8*).

As to **claim 31** Boyd does not expressly disclose at least one of the consumer and the NI locally manages provisioning of the SRQ using statistical information.

Hauser discloses provisioning network resources such as bandwidth and buffers based on statistically calculated demands (*col. 1 lines 1-25*).

Boyd and Hauser are analogous art because they are from the same field of endeavor with respect to communication systems. At the time of the invention, it would have been obvious to a person of ordinary skilled in the art to combine the teachings of Boyd and Hauser with motivations such as to allow resources to be used and assigned more effectively (*Hauser, col. 3 lines 5-8*).

16. **Claim 32** is rejected under 35 U.S.C. 103(a) as being unpatentable over "Boyd" in view of Patent No.: 5,867,663 to McClure et al., "McClure".

As to **claim 32** Boyd further discloses disclose do not expressly disclose the first QP comprises a send queue (SQ) (*pg. 9 pgh 117*).

Boyd does not expressly disclose the first QP comprises a limit queue (LQ).

McClure discloses allocating buffer space to a queue where the buffer space is implemented by assigning a counter limit which represents the number of cell locations in a buffer pool that may be used by a particular queue at any one time during the connection (*col. 5 lines 28-46*);

Boyd and McClure are analogous art because they are from the same field of endeavor with respect to communication systems. At the time of the invention, it would have been obvious to a person of ordinary skilled in the art to combine the teachings of Boyd and McClure with motivations such as to improve the system resources of a network (*McClure, col. 2 lines 5-8*).

17. **Claim 38** is rejected under 35 U.S.C. 103(a) as being unpatentable over Scott et al., "Scott" in view of "Hauser" and "Nattkemper" as applied to claim 37 above and further in view of Pub. No.: US 2002/0003777 A1 to Miyamoto, "Miyamoto".

As to **claim 38** Scott, Hauser and Nattkemper do not expressly disclose managing comprises limiting RQ resources available to the first QP;

Miyamoto discloses managing a queue to prevent certain connections from monopolizing the queue (*pg. 5 paragraph 77*).

Scott, Hauser, Nattkemper and Miyamoto are analogous art because they are from the same field of endeavor with respect to communication systems. At the time of the invention, it would have been obvious to a person of ordinary skilled in the art to combine the teachings of Scott, Hauser, Nattkemper and Miyamoto with motivations

such as to efficiently control traffic congestion in a communication system (*Miyamoto, pg. 1 paragraph 13*).

18. **Claim 39 and 40** are rejected under 35 U.S.C. 103(a) as being unpatentable over "Scott" in view of "*Hauser*" as applied to claim 34 above in further view of Patent US 6,990,528 B1 to Neal et al. "Neal".

As to **claim 39** Scott and Hauser do not expressly the first QP is used by a user space application.

Neal discloses a communication system where a queue pair is used by a user space application (*col. 11 lines 41-64*).

Scott, Hauser and Neal are analogous art because they are from the same field of endeavor with respect to communication systems. At the time of the invention, it would have been obvious to a person of ordinary skilled in the art to combine the teachings of Scott, Hauser and Neal with motivations such as to better scaling when multiple processes need to communicate between multiple nodes (*Neal, col. 2 lines 35-39*).

As to **claim 40** Scott and Hauser do not expressly the first QP is used by a kernel space application.

Neal discloses a communication system where a queue pair is used by a Kernel space application (*col. 11 lines 41-64*).

Scott, Hauser and Neal are analogous art because they are from the same field of endeavor with respect to communication systems. At the time of the invention, it

would have been obvious to a person of ordinary skilled in the art to combine the teachings of Scott, Hauser and Neal with motivations such as to better scaling when multiple processes need to communicate between multiple nodes (*Neal, col. 2 lines 35-39*).

Response to Arguments

19. Applicant's arguments filed on 3/28/08 have been fully considered but they are not persuasive.

Applicant asserts that "the Office Action does not provide evidence that buffer 260.0 and buffer 260.1 and large receive buffer 280 or virtual channel 1 are of a "queue" type. Although it appears that, for example, large send buffer 260 and large receive buffer 280 are partitioned into a plurality of buffers 260.0, 260.1, ..., 260.n, 280.01, 280.1, ..., 280.n as illustrated in FIG. 4. The Office Action does not provide evidence in Scott in which Scott describes a "queue" type with respect to, for example, buffers 260.0, 260.1, ..., 260.n, 280.01, 280.1, ..., 280.n as alleged in the anticipation rejection".

The examiner respectfully disagrees. Scott discloses shared buffers acting as queues. Thus, Scott teaches first and second queues as well as the claim shared receive queue.

Conclusion

20. Any inquiry concerning this communication or earlier communications from the examiner should be directed to LOUIS BELL whose telephone number is (571)270-3312. The examiner can normally be reached on Monday-Friday 7:30 a.m to 5:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nguyen Chau can be reached on 571-272-3126. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/LB/
/CHAU T. NGUYEN/
Supervisory Patent Examiner, Art Unit 2619